

WHAT IS CLAIMED IS:

1. A nitride-based semiconductor element comprising:
a plurality of mask layers formed at a prescribed
interval to come into contact with the upper surface of an
underlayer while partially exposing said underlayer; and

a nitride-based semiconductor layer, formed on the
upper surface of said underlayer and said mask layers,
consisting of a material different from that of said
underlayer, wherein

the minimum distance between adjacent said mask
layers is smaller than the width of an exposed part of
said underlayer located between said adjacent mask layers.

2. The nitride-based semiconductor element according
to claim 1, wherein

said underlayer includes a substrate, and
said mask layers are formed to be in contact with the
upper surface of said substrate.

3. The nitride-based semiconductor element according
to claim 1, further comprising facets, formed on an
exposed part of the upper surface of said underlayer
located between said adjacent mask layers, having at least
two types of different sizes.

? = facets.

= N based semiconductor layer?

Figs 1 & 2

4. The nitride-based semiconductor element according to claim 1, wherein

5 said nitride-based semiconductor layer is formed on the upper surface of said underlayer through a buffer layer.

Fig 4.

5. The nitride-based semiconductor element according to claim 1, wherein

10 said nitride-based semiconductor layer is formed to be in contact with the upper surface of said underlayer.

6. The nitride-based semiconductor element according to claim 1, wherein

15 said mask layers have overhangs protruding above an exposed part of said underlayer.

7. The nitride-based semiconductor element according to claim 6, wherein

20 said mask layers are at least partially inverse-trapezoidal.

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8. The nitride-based semiconductor element according to claim 1, wherein

25 said underlayer includes projection portions,

said projection portions are inverse-trapezoidal, and ^{Figs 12, 13}
said mask layers are formed to be in contact with the
upper surfaces of said inverse-trapezoidal convex portions. ?

5 9. The nitride-based semiconductor element according
to claim 1, wherein

 said underlayer includes projection portions, and
 said mask layers are formed to be in contact with the
upper surfaces of said projection portions so that side
10 portions of said mask layers protrude from said projection
portions.

 10. The nitride-based semiconductor element according
to claim 1, wherein

15 said mask layers include:
 a first mask layer formed to be in contact with the
upper surface of said underlayer, and
 a second mask layer, formed on said first mask layer,
consisting of a material harder to etch than said first
20 mask layer.

 11. The nitride-based semiconductor element according
to claim 1, further comprising a nitride-based
semiconductor element layer, formed on said nitride-based
25 semiconductor layer, having an element region.

12. A method of forming a nitride-based semiconductor comprising steps of:

forming a plurality of mask layers at a prescribed interval to be in contact with the upper surface of an underlayer while partially exposing said underlayer; and

growing a nitride-based semiconductor layer consisting of a material different from that of said underlayer on the upper surface of said underlayer and said mask layers, wherein

the minimum distance between adjacent said mask layers is smaller than the width of an exposed part of said underlayer located between said adjacent mask layers.

13. The method of forming a nitride-based semiconductor according to claim 12, wherein

said step of growing said nitride-based semiconductor layer includes a step of growing said nitride-based semiconductor layer on the upper surface of said underlayer through a buffer layer.

14. The method of forming a nitride-based semiconductor according to claim 12, wherein

said step of growing said nitride-based semiconductor layer includes a step of growing said nitride-based

semiconductor layer to be in contact with the upper surface of said underlayer.

5 15. The method of forming a nitride-based semiconductor according to claim 12, wherein said mask layers have overhangs protruding above an exposed part of said underlayer.

10 16. The method of forming a nitride-based semiconductor according to claim 15, wherein said mask layers are at least partially inverse-trapezoidal.

15 17. The method of forming a nitride-based semiconductor according to claim 12, wherein said underlayer includes a substrate, and said mask layers are formed to be in contact with the upper surface of said substrate.

20 18. The method of forming a nitride-based semiconductor according to claim 12, wherein said underlayer includes projection portions, said projection portions are inverse-trapezoidal, and said mask layers are formed to be in contact with the
25 upper surfaces of said inverse-trapezoidal projection

portions.

19. The method of forming a nitride-based semiconductor according to claim 12, wherein

5 said underlayer includes projection portions, and
 said mask layers are formed to be in contact with the upper surfaces of said projection portions so that side portions of said mask layers protrude from said projection portions.

10 20. The method of forming a nitride-based semiconductor according to claim 12, wherein

 said step of forming said mask layers includes steps of:

15 forming a first mask layer to be in contact with the upper surface of said underlayer,

 forming a second mask layer consisting of a material harder to etch than said first mask layer on said first mask layer, and

20 forming an etching mask on a prescribed region of said second mask layer and thereafter etching said second mask layer and said first mask layer through said etching mask serving as a mask thereby forming overhanging mask layers.

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21. The method of forming a nitride-based semiconductor according to claim 12, further comprising a step of growing a nitride-based semiconductor element layer having an element region on said nitride-based semiconductor layer.

22. A method of forming a nitride-based semiconductor comprising steps of:

forming a plurality of mask layers at a prescribed interval to be in contact with the upper surface of an underlayer while partially exposing said underlayer; and growing a nitride-based semiconductor layer consisting of a material different from that of said underlayer on an exposed part of the upper surface of said underlayer located between adjacent said mask layers to have difference in growth rate.

23. The method of forming a nitride-based semiconductor according to claim 22, wherein

said step of growing said nitride-based semiconductor layer includes a step of growing facets having at least two types of different sizes on said exposed part of the upper surface of said underlayer located between said adjacent mask layers thereby growing said nitride-based semiconductor layer.